

THE NATO STANDARD SAFETY INVESTIGATION PROCEDURES WHICH SHOULD BE INTEGRATED INTO HOME REGULATIONS

The Hungarian safety investigation concept differs in many ways from the NATO standards. First of all the home regulations don't make difference between safety and departmental investigations. This is the reason why they don't so effective.

Usually the accidents are caused by adverse interactions of man, machine and environment. Investigations and assessment of these elements should reveal human, material and/or environmental factor that caused or contributed to one or more system inadequacy (deviations). These deficiencies are usually attributable to leader, standards, training, individual, or support failure. Although an accident occurs "after the fact" its primary focus must be an identifying what happened and why it happened.¹

After the identifying system inadequacy the appropriate activity(s) responsible for correcting them should be notified. This is the "3W" approach to information collection, analysis and remedial measures.

The procedures are designated to assist us find answers the following basic questions:

- When did the system inadequacies (error, failure, environmental factor injury) occur?
- What happened? (human, material, environmental factor injury)
- Why did it happen? (system inadequacies, root cause(s))
- What should be done about it? (remedies for system inadequacies root cause(s))²

Highlight the significant elements of the safety investigation from different point of view; this is the goal of my short presentation.

¹ Army Accident Investigation and Reporting, Headquarters Department of the Army, Washington, DC, 1 November 1994, (Chapter 1, 1-5. Concept).

² Army Accident Investigation and Reporting, Headquarters Department of the Army, Washington, DC, 1 November 1994, (Chapter 3, Sequence of Events).

ACCIDENT CAUSATION

What causes accidents?

For successfully managed and effective accident prevention program we should understand what causes accidents.

Early man attributed hurtful happenings or accidents to the spirits. Later a more sophisticated view was accepted. The injured person was at fault because he should be “Punished”, he was “careless” or simple “stupid”³.

In the time of early industrial revolution workers who were injured, were hurt because they weren’t “careful”. Accidents were considered a natural side effect of production. At that time factory managers and workers considered accidents are cost of doing business, and people always had been and always would be careless (Figure 1).⁴

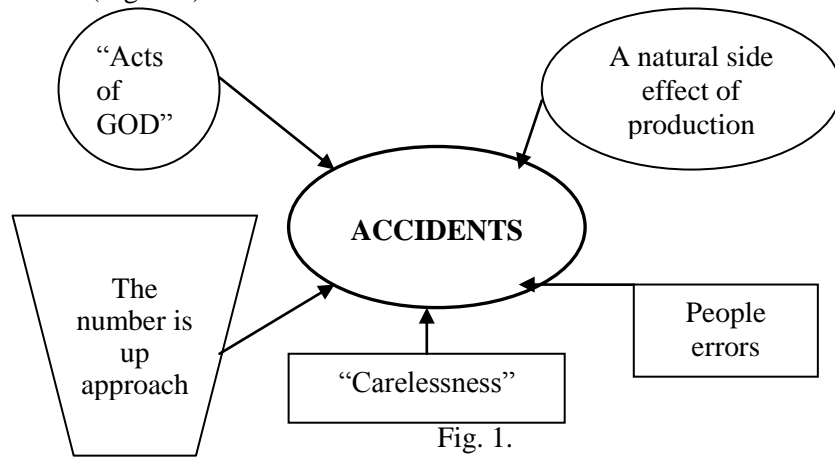


Fig. 1.

The court system upheld the view of individual responsibility for safety. Employers become to see the financially would be more effective to prevent accidents. They started to work out safety programs.

The modern causation model opens many effective countermeasures. The U.S. Army System model is simply a group of interrelated parts which, when working together as they were designed to do, accomplish a goal.⁵

The elements of the system are:

³ Aviation Accident Investigation, Student Handout, US Army Safety Center, Fort Rucker, Alabama, May 1996. Page 2.

⁴ Aviation Accident Investigation, Student Handout, US Army Safety Center, Fort Rucker, Alabama, May 1996. Page 3.

⁵ Aviation Accident Investigation, Student Handout, US Army Safety Center, Fort Rucker, Alabama, May 1996. Page 10.

- Task- communication, controls, arrangements, demands on men, and time aspects;
- Person:
 - Selection mentally, emotionally, physically, and qualified;
 - Motivation positive, negative, and retention.
- Training:
 - Types;
 - Targets;
 - Considerations.
- Environment;
- Material.

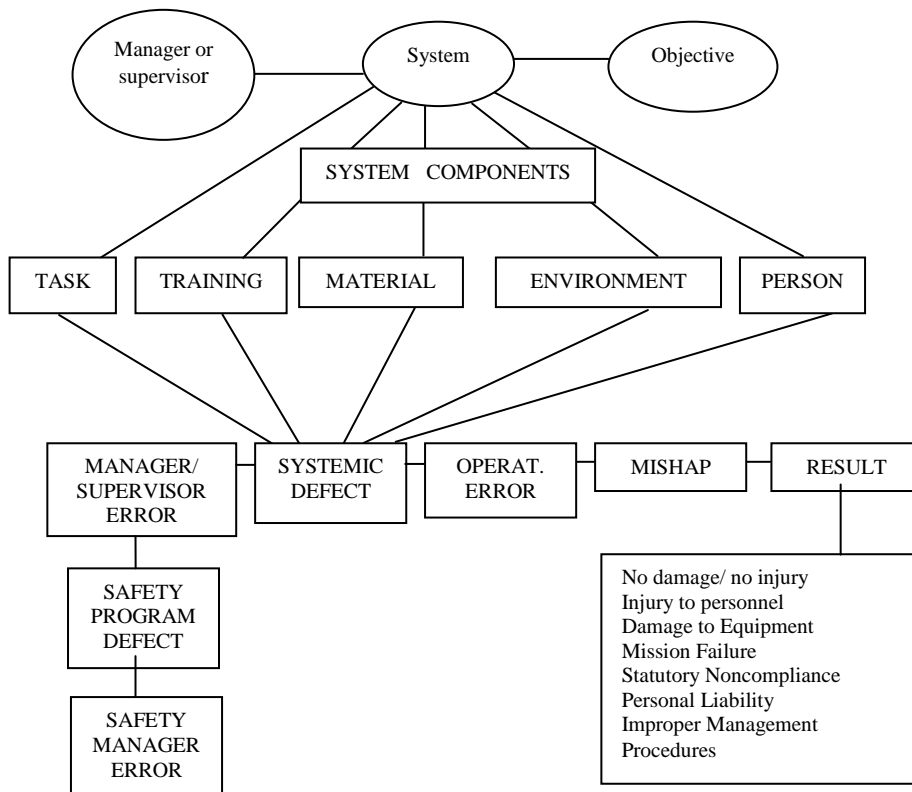


Fig. 2.⁶

⁶ Aviation Accident Investigation, Student Handout, US Army Safety Center, Fort Rucker, Alabama, May 1996. Page 11.

ACCIDENT INVESTIGATION

“3W” Approach to Information Collection, Analysis and Recommendations⁷

Why we should investigate accidents?

First of all, if we do not report the accidents we can not investigate it. If we can not investigate accidents the problem will go undetected and people will continue to be injured and equipment damaged. We should investigate accidents to protect personnel and equipment by identifying problems as early as we can and countermeasures can be developed. Investigating provides commanders with about the unit readiness and health hazards.

The successful accomplishment of an accident investigation will depend upon how it is planned, organized, and conducted. The investigation plan is a systematic procedure that will ensure continuity of efforts from the examination of the crash site to the submission of the final report.

The plane is divided four different phases:

1. Organization and preliminary examination (accident side).
2. Data collection (Human, Material, Environmental factors).
3. Analysis of data (findings and recommendations).
4. Completing the technical report.⁸

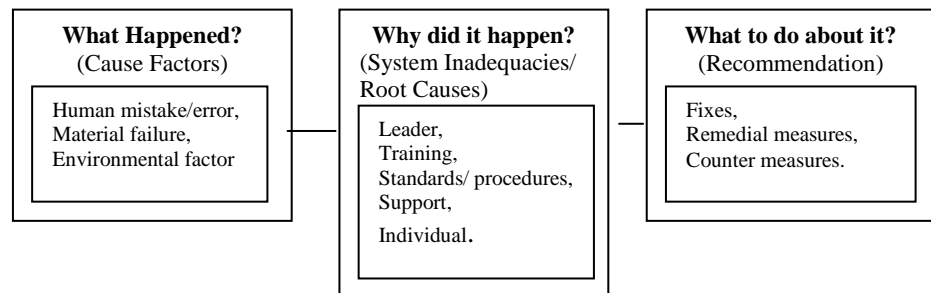


Fig. 3.

The definition of an accident is: an unplanned event or chain of events that results the flight can not be finished via pre-planned way, the aircraft is

⁷ Aviation Accident Investigation, Student Handout, US Army Safety Center, Fort Rucker, Alabama, May 1996. Page 9-11.

⁸ Army Accident Investigation and Reporting, Headquarters Department of the Army, Washington, DC, 1 November 1994, (Chapter 2, 2-1 Organization and planning)

destroyed, missing, or abandoned. The injury or occupational illness results in a fatality or permanent total disability.⁹ (See the Flight Event Diagram below, Figure 4.)

Flight event diagram

Produced by: Lt. Col. Zoltán Siklósi

When did error/failure/environmental factor/injury occur?

What happened? (Cause Factors: Human mistake/error; material failure; environmental factor)

Why did it happen? (System inadequacies/Root causes: leader; training; standards/procedures; support; individual.)

What to do about it?(Recommendations: fixes; remedial measures; countermeasures)

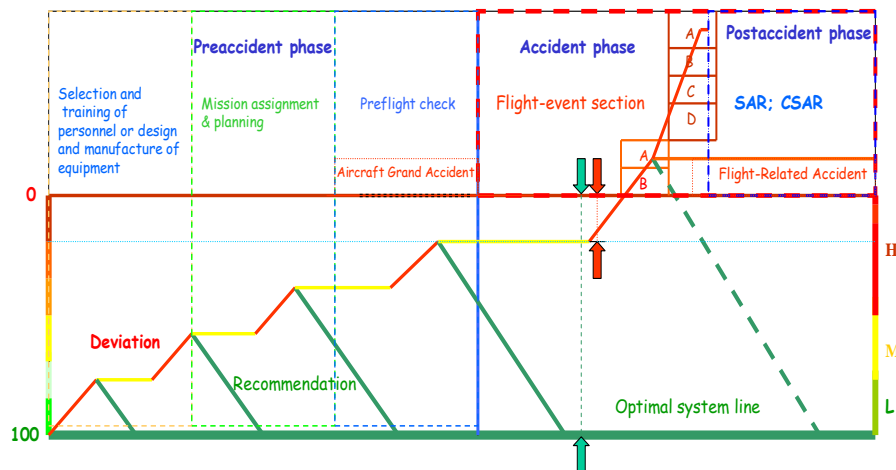


Fig. 4.

The diagram is a 4W” system approach of the accident investigation. On it has shown definitions, system deviations (findings), recommendations, type of accidents and all phases of the system. On the left site is a special scale (from 0 to 100%) showing a capability of the pilot to realize conflict situation, make a decision and clear danger away.

When it close to 100% it means that the pilot has a good chance to clear danger away. When it close to 0% it is most likely that accident will occurs.

The diagrams right side has shown the risk level scale. Close to the Optimal System Line the risk level is “LOW”. When system inadequacies (deviations) had summarized the risk level will be “HIGH”. The pilot, who took off with a huge amount of deviation behind him, could be sure, that hi will cross the flight event sections border, and the flight occurrence will occur.

⁹ Aviation Accident Investigation, Student Handout, US Army Safety Center, Fort Rucker, Alabama, May 1996. Page 16.

The reasons people make errors, material fails, environmental conditions contribute, or injuries occur in an accident are the keys to accident prevention. The rationale behind this premise is that if the reasons (system inadequacy (ies)) can be dealt with effectively, then the probability of similar deficiencies causing future accidents or injuries can be reduced.

PUBLICATIONS

- [1] Aviation Accident Investigation, Student Handout, US Army Safety Center, Fort Rucker, Alabama, May 1996.
- [2] Army Accident Investigation and Reporting, Headquarters Department of the Army, Washington, DC, November 1994,